Progress Report No. 19

Title: A Study of the Early Detection of Insect Infestations and Density/Distribution of Host Plants.

Citrus Insects Research
USDA, ARS
509 West Fourth St., Weslaco, Texas 78596

Period: August 1-31, 1974

EREP Investigation No. 319
NASA Contract No. 116301

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(A) Aerial photographic flights were continued over various portions of the Rio Grande Valley during this reporting period. The products of these flights were examined and the data was compared with that of S-190B data. Additional ground surveys were undertaken to verify our interpretations of S-190B data. The most vivid red color from winter vegetation obtained on color IR film from S-190B, Skylab IV, was alfalfa. Alfalfa appeared as a much brighter red color than all other vegetation growing at this time in the area. Alfalfa usually provides complete foliage cover of the soil preventing any interference with overall IR reflectance characteristics. The next intensity of red color appearing on the S-190B color IR film was produced by an irrigated pasture containing bermuda grass. Complete ground coverage was also produced by this vegetation. Winter oats and cabbage appeared slightly lighter in color than bermuda grass and collards lighter than cabbage. Fields in which cabbage has been harvested appeared light pint. Only the vegetation which was able to withstand freezing temperature could be analyzed in the near infrared band since the S-190B color IR data was obtained after a significant freeze had occurred. The appearance of undamaged sugarcane along the edge of Delta Lake provided evidence of the moderating effect of a large body of water on temperature extremes. The field of sugarcane which was located on the east side of the lake, had approximately 19% of the acreage undamaged due to this environmental influence.

(B) A request for additional data from SL3 and SL4 was submitted June 18, 1974. The acquisition of this data could prove very helpful in attaining some of our scientific objectives. A preview of this film at JSC showed evidence of pertinent data that would contribute additional support to the accomplishment of our research objectives.

(C) Evaluation of the data received from Skylab will be continued.

(D) Freeze damage in sugarcane drastically reduces the profit that is normally attained from it. A precise and rapid inventory of damaged sugarcane could be acquired from high resolution Skylab data if adequate coverage of the affected area was obtained. Results thus obtained could also be applied to other crops subject to freeze injury.

(E) Studies to relate ground truth, aerial photography and Skylab data will be continued.

(F) Sammy J. Ingle and M. Rene Davis traveled to NASA to view film (scale 1:30,000) of the Rio Grande Valley. This film coverage was taken by NASA with a P3 aircraft at the request of the USDA for surveying citrus acreage.